The
Ballarat
Naturalist

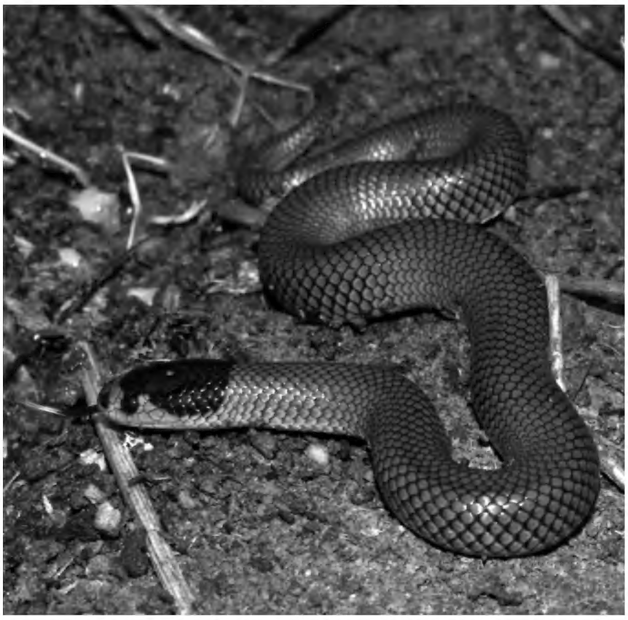
JULY 2009

BEN RESERVES EXCURSION
LEADER: JOHN GREGURKE

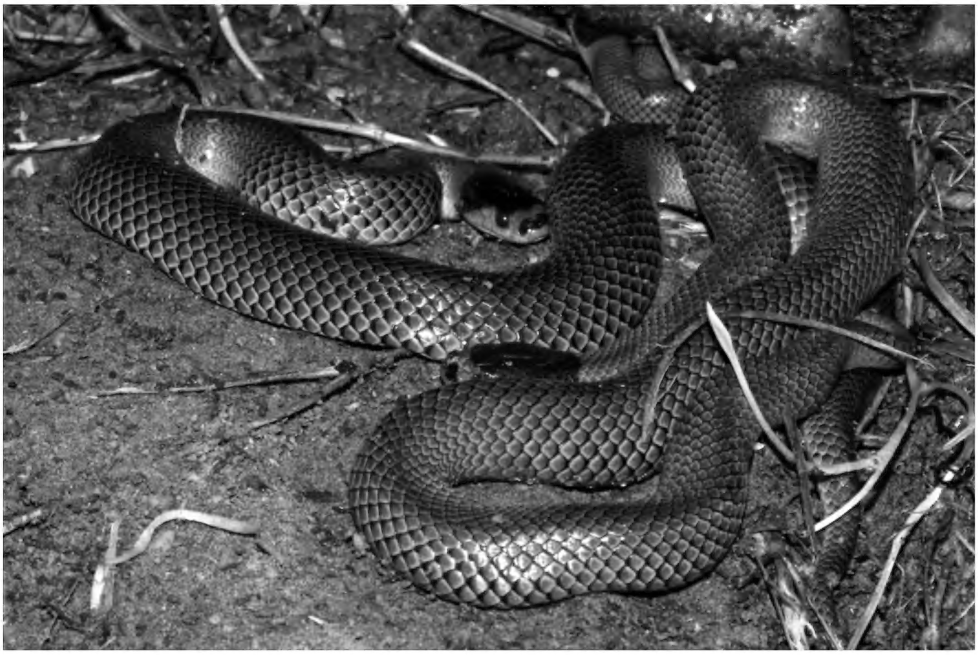
Field Nats caterpillar at Berringa, June 2009 excursion
(Photo-John Gregurke)

John Gregurke led the June excursion to Ballarat Environment Network (BEN) reserves to the south west of Ballarat. The route taken was through Smythesdale and Scarsdale then travelling towards Cape Clear with the first stop being at the Springdallah Water Reserve or Derwent Jacks Reservoir. The first sightings here were crane flies which were abundant. These have only one pair of wings with a structure consisting of a short appendage with a disc shape on the end just behind the wing. Next, attention was drawn to what appeared to be a fungus but which

Les explained was actually now known to be a lichen as it only grew in association with an algae. Originally named *Omphalina chromacea* as a fungus it is now called *Lichenomphalia chromacea* with the chromacea being because of its yellow colour. Also observed here was a good expanse of kangaroo grass *Themedia triandra*, swamp gum *Eu. ovata*, hedge wattle *Ac. paradoxa*, creeping bossia *Bossia prostrata*, sheeps burr *Acaenaechinata*, cranberry heath *Astroloma humifusum,* milky beautyheads *Calocephalus lacteus,* leaves which were *Drosera* sp., and wattle matt rush *Lomandra filiformis*. The fruit of a tree violet *Hymenanthera dentata* was investigated and observed to leave a violet stain on fingers when squashed. On the dam wall there was tall spike rush *Eleocharis sphacelata*. Although gorse on the reserve had been well removed and the reserve looked good, closer inspection showed there was considerable regeneration particularly near the dam wall. The reserve also has tiles placed to create habitat for monitoring of legless lizards as part of an ongoing research project. Carefully turning these over was relatively unrewarding with most having only slaters and millipedes. We were about to give up when under one there were five small black headed snakes. These created much interest and further research by a couple of members after the excursion. Inspection of one reference elicited the name Whip hooded snake but Chris Tzaros' book *Wildlife of the Box-Ironbark Country* was the most recent and would seem to indicate the common name is Little Whip Snake and the scientific name is *Parasuta flagellum*. Another tile enabled a brief look at a spotted frog before it found a safe hiding place. Here two alternatives were suggested, the common froglet and the spotted grass frog with the former being the most likely. This reserve certainly provided considerable interest and started the day well.



Hooded Whip Snakes
(Photos-Carol Hall)



Common Froglet
(Photo-Carol Hall)

The morning tea stop was at the "lighthouse" park in Cape Clear then the group travelled south easterly along the Cape Clear – Rokewood Road for about 4km to the DSE Illabarook Nature Conservation (grassland) reserve on the left. Entering through a gate, a dirt road traverses the reserve which in the 1860s was a gravel reserve. Here the results of direct seeded revegetation could be observed with running postman *Kennedia prostrata*, cranberry heath, hedge wattle, golden wattle *Ac. pycnantha*, wirilda *Ac. provincialis*, prickly broom heath *Monotoca scoparia*, and drooping sheoak *Allocasuarina verticillata* observed. There was also an impressive remnant silver banksia *Banksia marginata*. A second stop was made adjacent to an area that had been burnt just after Easter. This should result in a good area of kangaroo grass and be a lovely spot to visit in summer when there should be a field of golden-red seed heads. John observed that these grasslands are one of the few areas that warranted ecological burning, possibly every 2 – 4 years. A walk was made towards and along the adjacent gully observing common or golden everlasting, orchid and vanilla or chocolate lily leaves, cranberry heath, tall bluebell *Wahlenbergia stricta*, poa grass, spiny bursaria *Bursaria spinosa* and silver banksia *Banksia marginata* with new cones. Along the way there were wattles with interesting sap resin shapes which needed to be photographed. There were also gorse plants and briar roses, one with an interesting egg case which was later identified as a mantis species but not the usual praying mantis as its shape was different. Birds were also observed here with new-holland honeyeater, magpie, brown falcon, black bird, blue wren, grey thrush and magpie lark noted.

Exiting the Illabarook Conservation reserve at the north west corner a gravel road led to the Moonlight Road which is adjacent to the Illabarook Rail reserve, a reserve of 30ha which stretches for about 4km along the road. Stop-

Horsehair Fungus
(Photo-Carol Hall)

ping near a Yellow box *Eu. melliodora* both male and female drooping sheoaks *Allocasuarina verticillata* could be observed and the challenge was set to find the female red hairy flowers. Turning left into the Illabarook Football Ground road a stop was made at the 11ha BEN Illabarook Grassland Reserve to observe a good strike from direct seeding in the spring of 2008 before proceeding to the old football ground itself for lunch.

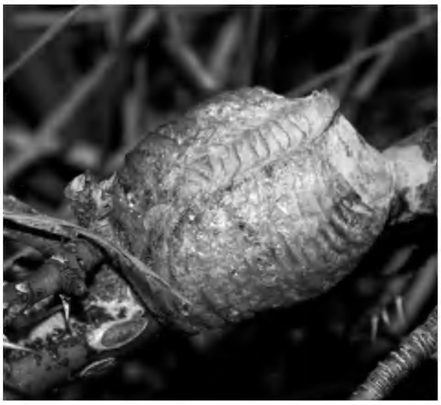
After lunch a stop was made at the 3 ha Rokewood Junction reserve which was on the right a short distance along the Rokewood Junction – Dereel Road. This reserve had lightwood wattle *Ac. implexa*, good kangaroo grass and sheoak regeneration. It also had evidence of a considerable rabbit population and an infestation of *Melaleuca armillaris*.

A brief comfort stop was made at the Derrel reserve where hilarity was added to the day as 'caterpillar boards' were found and tried. (See photo on page 1)

The final stop for the day was at the Staffordshire Reef Cricket Ground Reserve at the end of Skye Road. This is the more interesting of the two reserves at this location, the other being the Staffordshire Reef Church Reserve. Plants observed included honeypots *Acrotriche serrulate*, prickly broom heath *Monotoca scoparia*, hedge wattle *A. paradoxa*, Ovens wattle *Ac.pravissima*, scent bark *Eu. aromaphloia*, pink heath *Epacris impressa*, prickly tea-tree *Leptospermum continentale,* blackwood wattle *Ac. melanoxylon* with seeds, goodenia species and rough bark manna gum *Eu. viminalis subsp. cygnetensis* which varies from *Eu. viminalis subsp. viminalis* in having buds in groups of 7 compared with groups of 3 for the latter sub species. Of particular note was the large number of *Drosera*.

Only some of the reserves are signed and without being taken we would be unlikely to have investigated these reserves. Thanks to John Gregurke for compiling and leading a very interesting and varied excursion and for helping with the report.

Peter Dalman



Egg case of a mantid (Usually known as a mantis) but its shape is unlike that of a Praying Mantis, so it must be from another species - probably one of the large light brown ones. - (Photo-Carol Hall, notes Roger Thomas)

Roger Thomas

JUNE GENERAL MEETING PRESENTATIONS

The June meeting was members' night with four members making presentations.

Les Hanrahan showed tree photographs that he had prepared for the AGM. He had travelled to Canada and the USA and observed that the trees there were not primarily deciduous but there were many pines and conifers. Pictures included lichens on pines, large western red cedars and a Canadian version of driftwood with large trees in streams. The Talbot aboriginal birthing tree was included and some more recent photographs taken in the Blue Mountains when he was there for a fungi conference. Of particular interest was lightning damage to a tree which showed the bark and surface timber split but no charring. Les finished by explaining that there were considered to be five stages of decomposition of fallen trees. A photo which looked like a long earth patch showed the last stage with really no visible tree remaining.

Fran Harahan, having lived and travelled widely, had photos from a variety of countries. Her initial screen was filled with a boabab tree from Namibia which was so big that it had a chapel inside with seating for 20 people. To demonstrate how quickly trees can grow she had a photo of a blue gum tree she planted outside her Malawi home which had grown to twice the height of the house in 18 months. There was a photo of an enormous mango tree and a rare Welwitschia mirabilis which has only two leaves that continue to grow. A photo showed a fenced off mature one in a dry area where the only moisture is mist. The leaves were distorted so much that they didn't obviously resemble leaves.

Fran also gave an explanation and had photos showing the recovery of vegetation following the eruption at 8.32am on the 18th May 1980 of Mount St. Helens in America, the worst part of which took only 8 minutes. The initial photo showed the dense vegetation that was there before the eruption with Fran explaining and showing photos of the different zones of effect. Zones included pyroclastic flow, a blast zone where trees were knocked down and a singed zone. The first plant to come back was called fireweed but it was Rosebay willow herb (Epilobium angustifolium), not a senecio. Fran also had photos of bear tracks in the ash and described the return of animals including bears, deer and elks. While some lakes were protected by ice cover, lakes including Spirit lake were destroyed by the pyroclastic flow and took 5 years before they showed signs of recovery, but plants and frogs eventually returned and subsequently they have clearer water than before the eruption.

Tony Johns had been thinking about the toxic and polluting materials which modern society produces. He took an atomic perspective pointing out that over time, in addition to the protons, neutrons and electrons of which most people are aware, science had found particles and anti particles in atoms. His reflection theorised whether future discoveries might find ways to manipulate these particles or antiparticles which would cause the noxious material to disintegrate leaving clear, clean air in its place. He finished by pointing out that though we might think this fanciful and far-fetched, the same had been said of the predications two and a half thousand years ago of the Greek thinker Democritus who was proved right with his atomic view of matter. Tony certainly had been thinking and made us also think!

Peter Dalman

ASPECTS OF THE NATURAL HISTORY OF GOTLAND, SWEDEN

Gotland is an island 150km x 50km in the Baltic Sea, three hours by ferry south of Stockholm. It has been settled since at least as far back as the Bronze Age, 3000 years ago so its landscape is a product of human activities as well as natural processes. Geologically it is mostly Silurian limestone representing coral reefs in tropical seas, with a narrow strip of sandstone in the south. Both rock types have had economic value.

Isostatic readjustment after the retreat of the Ice Age glaciers has left abandoned cliffs, raised beaches and old sea stacks above current sea levels. Originally the island was covered with forest; clearing to make way for arable farming over hundreds of years has had significant effects. Pine trees now grow mostly in the north and deciduous forest in the south. Some hay meadows created to grow animal fodder have been preserved and today are managed traditionally as they are home to flora unique to the limestone environment, including orchids. Marshes were drained to increase the arable area, too but the value of wetlands is now understood and several are now managed for wildlife.

The calcareous groundwater gives rise to flush fens supporting their own array of plants. Bare limestone surfaces known as "alvar" are the result of hundreds of years of sheep grazing on shallow soils and support low-growing, often tundra-like plants. Primitive breeds of sheep and ponies – Gutefar sheep and Russ ponies, once endangered, are now conserved. Coastal marshes, meadows and sheltered bays are home to a rich variety of birds, many of which breed on the island or roost on migratory journeys – arctic tern, avocet, garganey, gadwall, eider duck, dunlin, lapwing, guillemots and razorbills, to name just a few.

Carol showed photos taken when she visited Sweden last year as well as images from the internet, including superb bird paintings by Lars Jonsson, a well-known artist whose gallery she visited and who lives in the south of the island and has travelled widely in the colder regions of the world!

Channel Country and Lake Eyre – Easter 2009

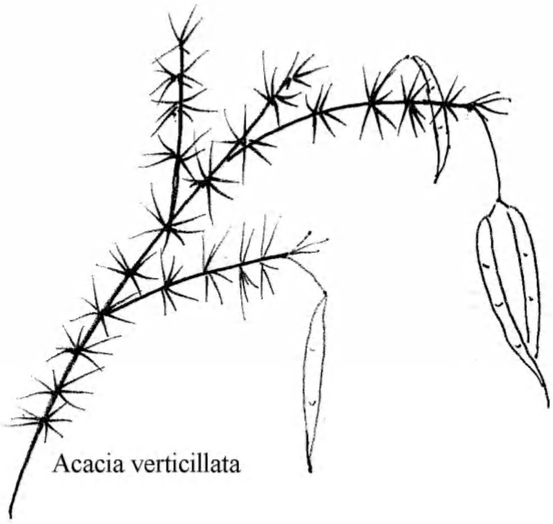
Carol enjoyed a 4-day flight by light plane from Stawell to see the floods along Cooper Creek, the Diamantina River, Warburton River and Lake Eyre. Rain in the headwaters of these rivers takes seven months to reach Lake Eyre, spreading out over wide floodplains, some of it soaking and evaporating. Viewed from the air you can really see the extent of such floods, from the multiple channels of Cooper Creek south-west of Windorah to the wall-to-wall ochre-coloured waters of the Diamantina, its channels outlined by the taller trees along the more developed waterways. Floods had isolated Birdsville earlier in the year and by the river fresh growth was peeping through the sun-dried cracks in the newly deposited mud.

From Goyder Lagoon a single channel, the Warburton River, empties into Lake Eyre. The still lake reflected the blue sky and clouds; islands occur in the middle and are breeding grounds for pelicans; white salt bordered the areas of water, although where dust had blown onto it, it appeared brown. Parts were tinged with pink, perhaps evidence of the brine shrimps on which many of the birds feed. (This was not a bird-watching trip – that needs to be done on the ground and using canoes on the creeks and lakes).

Proprietors of scenic flights in William Creek were doing a good trade – radio traffic was considerably busier in the area. On the final day we flew over Marree Man, a 4.5 km long figure etched into the landscape in 1998 (by the army, I have it on good authority) and then past Lake Frome to the northern Flinders Ranges, revealing fascinating solid geology in the tilted, dipping sedimentary rocks. The patterns of the Darling and Anabranch rivers from 4000 feet made aspects of fluvial geomorphology come alive with their oxbow lakes and point bar deposits, contrasting with the geometrics of the irrigation areas.

Photographs taken from the plane at heights varying between 800 feet and 2000 feet gave unique shots of this flooding event – you needed to be high to see the vast extent of it. Now ground travel to some of these areas would be great to provide some of the smaller details.

Carol Hall.



BOOK LAUNCH

Wattles of Ballarat

Friday 3rd July
Club meeting at 7.30pm
Book Launch at 8.00pm by
Ern Perkins OAM
Speaker - Tony Wilson -
BEN Chairman
- *Nature Photography*
Supper

MINERALOGY OF GOLD

STAFFORD MCKNIGHT, LECTURER – UNIVERSITY OF BALLARAT.

Stafford McKnight provided a fascinating insight into the occurrence and extraction of gold. Gold can be deposited and situated in a variety ways. The gold found at Ballarat and Bendigo was typically deposited at intermediate temperatures of about 300 degrees C and referred to a being mesothermal formed gold. It is generally hosted by quartz or sulphite minerals. It is coarse or nuggetty and occurs with quartz or arsenopyrite which may be a silver colour. Quartz is normally thought of as being white but it is usually clear with the white colour being felspar. Only vein quartz is milky. The reason this is milky is similar to why clouds appear white. When viewed microscopically, vein quartz has voids bounded by crystal on the outside which could be thought of as negative crystals. The inclusions in these voids are fascinating. In the case of Ballarat there is liquid methane. There can also be water, salt water and liquid carbon dioxide. Bunsen of Bunsen burner fame put quartz in a flame and noticed it was a yellow colour indicating the presence of sodium as part of salt. Whilst the noble metals including gold resist acid attack, hot salty water is extremely corrosive to gold. The temperatures which existed at the time of the formation of gold were quite high. At the Ok Tedi copper-gold deposit in New Guinea, the gold appears to have been deposited from salty water which would have been at 600C. The bubbles in the voids provide an indirect means of ascertaining the temperature at which the gold was deposited. In the case of Ballarat the bubbles disappear at 298C which means the gold would have precipitated at a temperature just above this.

Mesothermal gold like that found at Ballarat is always associated with arsenic. Pyrite associated with gold always has arsenic. Gold also usually has silver with it. Ballarat gold is very yellow because it has a low silver content at 3% whereas Stawell gold is less yellow as it has 15% silver, and gold found at Glen Wills in eastern Victoria has 30% silver. Gold with this level of silver is called electrum.

Most gold is nuggetty even if it is very fine. Bendigo had the most nuggetty gold in the world which caused problems prospecting as it was possible to hit a nugget which therefore gave high analysis or miss one in which case none was shown even though the average yield was somewhere in between. With this type of gold it is easy to get the first 80% but the rest is difficult to recover. A totally different type of gold is found at Northgate's Fosterville mine which is only 20km from Bendigo. Here no visible gold is seen, even with a microscope, despite there being several thousand parts per million. All that is seen is arsenopyrite. The gold here is as atoms in the arsenopyrite crystal structure. It forces the crystals to grow long and thin but cannot be physically removed. It used to be removed by roasting, causing considerable environmental damage. Now the gold is extracted by bacterial leaching. The bacteria used was around in early days and can be found down any old gold mine. They live by utilising iron and sulphur. They do not need light, plants or oxygen, have DNA similar to more primitive life forms and are perhaps like bacteria that live deep in the ocean near black smokers. They are now cultured and it takes only 3 to 5 days for them to eat away unwanted substances and leave the gold.

In respect to the question 'Do gold nuggets grow in the ground?', it seems not much. The CSIRO has done work on Kalgoorlie gold looking at crystal structure. This is uniform and consistent with crystals formed at high temperature. With temperature increasing 30C for every kilometre depth, the 300C at which the gold was formed means it was 10km deep when precipitated with little change as it came closer to the surface. At Fosterville however there have been specimens with a very thin film around the outside indicating some change which may have occurred in the top 6 to 10m.

This certainly was a fascinating explanation of gold, its formation and extraction with what is a technical subject being delivered in a very understandable and interesting presentation. Stafford was introduced and thanked by Greg Binns.

Peter Dalman

Club Camp at Apollo Bay
Christian Brothers facility, Nelson Street
Monday 13 July to Friday 17 July 2009

Don't forget you will need to bring linen and towels and a hot water bottle! There is no heating in the bedrooms.

We are looking forward to a relaxing, interesting, social week.

Cost is $20 per night.

Field Naturalists Club of Ballarat Inc
A0014919P ABN 13150 403 135
Minutes of General Meeting 5 June 2008

Opening and Apologies

The President, Peter Dalman, welcomed 24 members.

Apologies -Val Hocking, Accepted on the motion of John Mildren; seconded Peter Billing.

Minutes of previous meeting Tabled and Summarised in Ballarat Naturalist.

Accepted on the motion of Carol Hall, Seconded: Nina Netherway.

Correspondence

IN:

- FNCV: Field Nats News, June 2009.
- Bendigo FNC: Whirrakee, May 2009.
- Geelong FNC: Geelong Naturalist, May & June 2009.
- Castlemaine FNC: Castlemaine Naturalist, May & June 2009.
- Hamilton FNC: SEANA Spring Camp at Grampians Field Studies Centre, 2-4 October.
- Bush Heritage Australia: Appeal.
- TFN: Appeal.
- Threatened Species Network: TSN News, Winter 2009.
- Linda Bradburn, Environmental Education Officer, Melton Shire Council: Course to help identify the ant species Mymecia 17, Saturday 13 June.
- Margaret Rotheram: subscription and postage.
- SEANA: Loan ($2801.60) for Wattles of Ballarat; Cash advance ($800) for SEANA Camp.
- Pax Hill: Booking form for SEANA Autumn 2010 Camp.
- Star of Sea Convent: unavailable for camp. Alternative arrangements at Christian Brothers, 13-17 July.
- Bendigo Bank: statement.
- Waller & Chester: Invoice for Wattles of Ballarat, $3801.60.

OUT:

- Lyndsay Fink: Thanks for service to club.
- Pax Hill: deposit for SEANA 2010 Autumn Camp.
- Christian Brothers, Apollo Bay: Booking for club camp,13-17 July.

Inwards correspondence received and outwards correspondence accepted on the motion of Ken Hammond; seconded Bill Murphy.

Business arising from correspondence:

Nil.

Reports

Treasurer's Report: Opening Balance $5576.88, Income: $204.00 Expenses: $0 - Closing Balance: $5780.88. Moved Les Hanrahan, Seconded: John Morrish.

Cave Hill Creek nature trail: Second visit to site. Draft notes for Discovery Trail being prepared.

VVP Biosphere forum: 30 people heard Rob Gell talk on climate change and the work of the Mornington Peninsula and Western Port Biosphere. Aim of biosphere is to encourage sustainable development. Requires cooperation of Local Government, CMA's and community.

Moorabool River seminar: Peter Dahlaus outlined the geology of the Moorabool catchment and how it effects the present day geomorphology and hydrology.

Great Dividing Trail: bird lists prepared and sent to Neil McCracken using information from BOCA, Ken Hammond and Ken McDonnell.

Ian Magee: Telephone call to report progress on Mt Cole – Pyrenees Biolink. Letters in local press are showing support for conservation in the area.

General Business

- Arrangements for 3 July meeting, Launch Wattles of Ballarat by Ern Perkins, were outlined.
- FNCB Camp at Apollo Bay, Christian Brothers, 13-17 July: Members asked to indicate attendance.
- John Petheram spoke of plans to run a U3A Field Ecology class. Requested assistance with field excursions to farms and bushland sites.

Show and Tell

Carol Hall showed the recently published book Flowers of Anglesea and Airey's Inlet edited by Margaret McDonald.

Field Reports

John Gregurke: Flame Robin (1 male and 4 brown birds) at Lake Burrumbeet.

Excursion Arrangements:

Sunday 3 May, meet at Ballarat Horticulture Centre to leave at 9.30am for Springdallah Water Reserve, Illabarook Grasslands, Recreation Reserve and Rail Reserve, Rokewood Junction Road Reserve, Staffordshire Reef Church Reserve and Cricket Ground. Leader: John Gregurke.

Mid month excursion, Thursday 18 June, leaving at 9.30am to trial method for 20x20m quadrat survey in Creswick Forest.

Syllabus Item

Presentations were given by club members:

Les Hanrahan: Trees

Fran Hanrahan: Trees around the world; recovery after Mt St Helens eruption.

Tony Johns: Theory of use of sub-atomic particles and forces to destroy air pollutants.

Carol Hall: Gotland; Lake Eyre.

Peter Dalman thanked all the members for interesting presentations.

Supper

CALENDAR 2009

JULY

Fri 3	**Club Meeting - Launch of our Wattle Book.** *Nature Photography*, Tony Wilson, BEN Chairman
Sun 5	**Excursion** - *Significant trees* - Dr Fran Hanrahan
Mon 13 - Fri 17	**Club Camp to Apollo Bay**
Tues 14	Committee meeting to be held at Club Camp

AUGUST

Fri 7	**Club Meeting** - *Origin of Botanical Names* - DVD - Peter and Claire Dalman
Sun 9	**Excursion** - *Rivers of Gold* - Peter and Claire Dalman

SEPTEMBER

Fri 4	**Stella Bedggood Memorial Lecture** *Groundwater-Surface Water Interactions* - Peter Dahlhaus, Senior Lecturer, University of Ballarat; Specialist in Environmental Geology and Hyrogeology
Sat 5	**Excursion** - *Charlesford Mine, Basalt* - Carol Hall

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Committee

President	Mr Peter Dalman
Vice-President	Mr Greg Binns
Secretary	Mr John Gregurke
Treasurer	Mr Les Hanrahan

Miss Helen Burgess ....
Mrs Carol Hall ....
Mr John Morrish ....
Ms Nina Netherway (editor) .....
Mrs Claire Dalman ....
Mrs Val Hocking ....
Dr Frances Hanrahan ....

Correspondence: PO Box 328W, Ballarat West, 3350
Email: Secretary:-John Gregurke, Editor: Nina Netherway

Website: www.ballarat.yourguide.com.au Click on *Community>Local Clubs> Environment*

Meetings are held at Ballarat Horticultural Centre, cnr. Gregory & Gillies Sts (VicRoads 254 F8) on the first Friday of the month at 7.30pm.

Excursions: Depart from Ballarat Horticultural Centre, cnr. Gregory & Gillies Sts (VicRoads 254 F8) at 9.30am unless otherwise specified.

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